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A new *Begonia* (*Begoniaceae*), *Hoya* (*Asclepiadaceae*) and *Sonerila* (*Melastomataceae*) from Fraser's Hill, Peninsular Malaysia

Ruth Kiew

Department of Biology,
Universiti Pertanian Malaysia,
43400 Serdang,
Selangor, Malaysia

Summary. A recent field survey of the conservation status of plants at Fraser's Hill, Pahang, in Peninsular Malaysia led to the discovery of three new taxa—*Begonia fraseri* Kiew (Begoniaceae), *Hoya parasitica* (Roxb.) Wall. *ex* Wight var. *hendersonii* Kiew (Asclepiadaceae) and *Sonerila fraseri* Kiew (Melastomataceae).

Fraser's Hill is a well-known hill station which most botanists have visited and made collections from since I.H. Burkill and R.E. Holttum first carried out a botanical reconnaissance of the area in 1922 when the hill station was first being opened up for development.

With recent extensive development and future plans for further development, it was timely to carry out a field survey to assess the conservation status of the flora and of rare and endangered species in particular. This led to the discovery of the new *Sonerila fraseri* on Pine Tree Hill, the highest peak, and the recognition as new of two other taxa, *Begonia fraseri* and *Hoya parasitica* var. *hendersonii*. While *S. fraseri* is endemic to Fraser's Hill, the other two taxa have been collected from one other mountain in Pahang, in the case of the begonia from Gunung Benom and for the hoya from lower montane forest at Cameron Highlands.

This brief paper validates the names of these taxa prior to the publication of the full account of "A Checklist of Seed Plants of Fraser's Hill and their Conservation Status" by the Forest Research Institute Malaysia.

Descriptions of the new taxa

Begonia fraseri Kiew **sp. nov**. *habitu B. longicaulis et B. venusta affinibus, ab ambobus pedunculis petiolis brevioribus differt. Typus: R. Kiew RK 3831, Peninsular Malaysia, Fraser's Hill (holotypus UPM).*

Low decumbent herb, prostrate; stem slender, rooting at nodes, erect stem *c.* 14–30 cm long and 0.6 cm thick, reddish brown, fleshy, glabrous, nodes with a raised corky annulus, internodes 12–22.5 cm long. Stipules in pairs, persistent, glabrous, narrowly triangular 10–20 × 3.5–5 mm, apex setose. Petiole erect, glabrous, reddish brown, fleshy, on prostrate stems 10.5–24.5 cm long, on erect stems 7.5–22 cm long. Lamina unequal; midrib perpendicular to petiole; broadly oval, 12–17.5 × 7–15 cm, base cordate, unequal, apex cuspidate 1.5 cm long; chartaceous in dried state, in life glossy, dark green sometimes with a bluish hue; margin subentire, minutely denticulate corresponding to vein endings; lateral veins 4–6, radiating from base, 3–4 on the larger half of leaf and 1–2 on the smaller, slender, midrib and veins slightly impressed above, prominent beneath. Indumentum: lamina glabrous to the naked eye but both surfaces with sparse microscopic uniseriate trichomes, lower surface of midrib and veins ferrugineous from appressed matted reticulum of fine trichomes. Inflorescence a terminal cymose panicle, (2–)4–9 cm long extending to 11 cm in fruit, with one large terminal male flower 3.5 cm long and 4 reduced cymules each comprising one female flower and one smaller male flower 2.5 cm long. Peduncle 6–10.5 cm long, reddish-green, glabrous; bracts erect, narrowly triangular, 5 × 1.5 mm, apex acute. Pedicels of male flowers 7–10 mm long, of female flowers 2–3 mm extending to 25 mm in fruit. Flowers white, tinged pink in upper half of tepals, becoming completely white with age, pedicel of largest flower 22 mm long. Male flowers with 2 almost circular persistent outer tepals, up to 17 × 17 mm in terminal flower and 11–13 × 14–16 mm in lateral flowers, inner tepals elliptic, (6–)10–13 × 5–8 mm, apex rounded, extremely thin and delicate, caducous; stamens many and clustered, cluster sessile; filament 2 mm long, pale yellow; anther 1.5 mm long, spathulate, connective broad. Female flowers with 4 pink tepals, isomorphic and equal-sized, ovary with 3 equal wings, green tinged red, locules 2, placenta divided into 2. Capsule pendant, 15–17 mm long and 28–36 mm wide (measured to the tips of wings), 2 lateral wings bluntly triangular, thin, subcoriaceous, 7–13 mm long and 8–13 mm wide, posterior wing oblong with rounded apex, robust and fibrous, 12–15 mm long and 12–15 mm wide. Seeds oblong, *c.* 0.3 mm long, collar cells straight and about half length of seed.

DISTRIBUTION. Pahang, at Fraser's Hill and Gunung (Mt.) Benom. At Fraser's Hill it is not common and is known from a few, very localised populations.

HABITAT. Lower montane forest at about 1325 m (on Gunung Benom *c.* 1700 m), in deep shade on well-drained slopes usually growing on the ground, sometimes scrambling over rocks or low shrubs.

SPECIMENS EXAMINED—PENINSULAR MALAYSIA: Pahang, Fraser's Hill, *Addison* SFN 37198 (SING), SFN 37381 (SING), *Allen s.n.* 24 March 1953 (SING), *Burkill & Holttum* 8428 (SING), *Corner* SFN 33176 (SING), *Kiew* RK 1247 (UPM), RK 3268 (UPM), RK 3562 (UPM), RK 3829 (UPM); Gunung Benom, *Nat. Coll. F.M.S. Mus. s.n.* 2 Aug 1925 (SING).

This species was first collected by Burkill and Holttum in 1922, who recorded it as *Begonia* sp. in their list of plants from Fraser's Hill (Burkill & Holttum 1923). Henderson (1927) later identified it as *B. longicaulis* Ridl., a species known from upper montane forest on Gunung Tahan, Pahang, and Gunung Korbu, Perak.

It certainly belongs to the same group of species as *B. longicaulis*, which Irmscher (1925) placed in *Begonia* section *Platycentrum* subsection *Venustae*. Within subsection *Venustae*, only *B. longicaulis* and *B. venusta* King share the same habit as *B. fraseri* in producing slender prostrate stems, which give rise to semi-erect stems (i.e., stems which become decumbent unless supported) with long internodes. They also all produce few-flowered inflorescences with large white male flowers.

While resembling *B. longicaulis* in its cuspidate leaf apex and persistent setose stipules, *B. fraseri* differs in fruit shape (*B. longicaulis* has a unique fruit with a narrow posterior wing, Fig. 1). It also differs from *B. longicaulis* in the male flowers having inner tepals less than half the width of the outer (in *B. longicaulis* the outer tepals are narrower than the inner). Fruits of *B. fraseri* and *B. venusta* are similar in having a broad posterior wing but that of *B. venusta* is more tapered (Fig. 1a & c). *B. venusta* also differs in the leaf, which is frequently reddish beneath and which has an acuminate apex, and in the female flowers, which have five petals. In addition, *B. fraseri* differs from both these species in its leaf, which is oval (i.e., significantly longer than broad, while the other two species have leaves almost as wide as long) and in its peduncle, which is much shorter than the petiole (the other two species have peduncles as long as or longer than the petioles).

Begonia fraseri grows at lower altitudes (1000–1270 m) on Fraser's Hill than either *B.* venusta (1500–2000 m) or *B. longicaulis* (1850 m). From Gunung Benom it was recorded at *c.* 1700 m but this is doubtful as field notes are lacking.

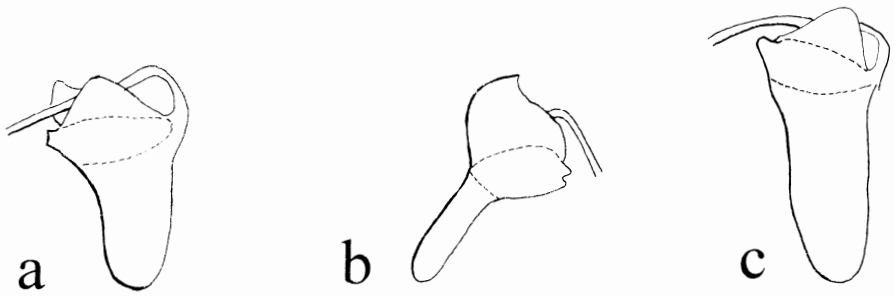

Fig. 1. *Begonia* fruits: **A.** *B. fraseri* (*Kiew* RK 3831). **B.** *B. longicaulis* (*Kiew* RK 2454). **C.** *B. venusta* (*Jaamat* 27575). All life-size.

Hoya parasitica (Roxb.) Wall. *ex* Wight var. **hendersonii** Kiew, **var. nov.** *a Hoya parasitica (Roxb.) Wall. ex Wight var. citrina (Ridl.) Rintz foliorum angustioribus et tenuioribus diagnoscenda. Typus: Henderson SFN 23668, Peninsular Malaysia, Cameron Highlands, Ringlet (holotypus SING).*

Glabrous climber; stem with conspicuous lenticels, *c.* 5 mm thick. Petiole stout, 2 cm long, 3 mm thick. Lamina narrowly ovate to oblong, 11.5–17 × 5–6.5 cm, base rounded, slightly cordate at petiole (i.e., cordate base does not extend beyond width of petiole), margin slightly recurved drying undulate, apex acuminate; main pair of secondary veins parallel to midrib and reaching apex, basal pair of weak veins parallel and close to margin, tertiary veins forming a fine much-branched reticulum, in dried state midrib, secondary and tertiary veins slightly prominent above and beneath, in life veins slightly prominent above but plane beneath, thickly coriaceous but not rigid, green above and beneath. Inflorescence axillary, umbellate, peduncle 2.75–7.5 cm long, 2 mm thick, stiff, erect, many-flowered (15 flowers in *Md Nur s.n.* and 25 in *Henderson* SFN 23668), flowers forming a hemisphere. Pedicels slender, of equal length, 1.3–2.5 cm long. Flower 11 mm wide, corona 8 mm wide; calyx tube 0.5 mm long, lobes acute 3 mm long, 1 mm wide at base narrowing to a rounded apex, appressed to corolla; corolla tube 3.5 mm long, lobes 5.5 mm long, 4.5 mm wide in basal half narrowing to an acuminate apex in upper half, glabrous to naked eye, minutely pubescent at ×30 magnification; corona lobes elliptic, 4 × 2 mm, not curved, both outer and inner phlanges narrowed to apex; anther 0.6 mm long, caudicle short without wings, pollinia ellipsoidal with narrow longitudinal wing; stigmatic surface slightly depressed. Follicles not known.

DISTRIBUTION. Endemic to Peninsular Malaysia, known only in Pahang at Cameron Highlands and Fraser's Hill.

HABITAT. Lower montane forest, 1200–1260 m altitude.

SPECIMENS EXAMINED—PENINSULAR MALAYSIA: Pahang, Cameron Highlands, Boh Plantations, *Md Nur s.n.* 29 April 1937 (SING); Fraser's Hill, *R. Kiew & S. Anthonysamy* RK 3531, 23 April 1992 (UPM).

Of the 26 Peninsular Malaysian hoyas, few live above 1000 m altitude. Only four, *H. lacunosa* Bl., *H. micrantha* Hook. *f.*, *H. wrayi* King & Gamble and this new variety of *H. parasitica*, are found in lower montane forest. No species is found in upper montane forest. In addition, *H. parasitica* var. *hendersonii* is rare, being known from just three collections.

This new variety has flowers which are closely similar to those of *H. parasitica* except that the corolla lobes on *Henderson* SFN 23668 are not reflexed and are almost glabrous. However, towards the end of the flowering period the corolla lobes of *H. parasitica* var. *parasitica* partially close. It is possible that the flower of var. *hendersonii* were collected at this stage. Rintz (1978) describes the corollas of var. *parasitica* and var. *citrina* (Ridl.) Rintz as pubescent and his illustrations show them as conspicuously and very densely pubescent. However, in the flowers I examined they were only minutely pubescent, appearing almost glabrous to the naked eye.

The three varieties can be distinguished on leaf characters (Table 1). Var. *hendersonii* is more similar to var. *citrina* in its ovate leaf, slightly cordate base, venation and longer petioles but differs in the leaf being less rigid and proportionally narrower. Another apparent difference according to Rintz (1978) is in pedicel length which he recorded as *c.* 3 cm long in var. *citrina* and var. *parasitica*, but examination of specimens does not support this as pedicel length ranges from 2 to 3 cm in these two varieties and so is not different from that in var. *hendersonii*.

In Peninsular Malaysia the varieties are separated ecologically. As mentioned above, var. *hendersonii* grows in lower montane forest between 1200 and 1260 m altitude, the other two are lowland species. Var. *parasitica* is common in strand forest especially on islands, while var. *citrina* is common on limestone (though it is rarely found in flower) and sometimes in riverine fringe forest.

Although Ridley (1923) named var. *citrina* for its yellow flowers, flower colour is variable in both var. *citrina* (light yellow or white with a deep red or pinkish red centre) and var. *parasitica* (white to pinkish-white with pink or red centre). Flowers of var. *citrina* are fragrant, sometimes producing a strong gardenia scent. The flower colour and scent of var. *hendersonii* were not recorded.

Table 1. Characters which distinguish the three Peninsular Malaysian varieties of *Hoya parasitica*.

	var. *parasitica*	var. *citrina*	var. *hendersonii*
Lamina			
shape	elliptic	ovate	narrowly ovate-oblong
length (cm)	(6.5–)11(–13.5)	10–18.5	11.5–17
width (cm)	(3–)4.5(–6)	6.5–8.5	5–6.5
width:length ratio	1: 2.5	1: < 2	1: 2–3.5
base	cuneate	cordate	cordate
texture	succulently coriaceous	rigidly coriaceous	coriaceous
Venation			
prominence	obscure	conspicuous	conspicuous
lowest pair of lateral veins extending	about halfway to apex	to apex	to apex
Petiole length (cm)	0.5–0.75	1.5–2	2

This taxon is deemed worthy of varietal status not only because it is readily distinguished from the other two varieties by leaf characters, but also because of its montane habitat. It is named for M.R. Henderson, who made the first collection.

Sonerila fraseri Kiew, **sp. nov.** *S. erectae Jack affinis sed caulibus teretis, floribus candidis, petalis et capsulis longioribus differt. Typus: Ruth Kiew RK 3826, Peninsular Malaysia, Pahang, Fraser's Hill, summit of Pine Tree Hill (holotypus UPM; isotypi L, SING).*

Finely rooted herb, flowering at *c.* 3 cm tall when still unbranched, branching to form a clump with erect stems to 12 cm tall; stem terete, *c.* 1 mm thick, magenta, sparsely hispid with glandular hairs *c.* 0.75 mm long. Leaf pairs isomorphic and equal-sized. Petiole 1.5–6 mm long. Lamina ovate, (6–)11(–25) × (4–)7(–14) mm, base rounded, apex rounded, mid-green above, pale beneath with glistening epidermis; indumentum of uniseriate, multicellular, non-glandular hairs, moderately dense and 1.5 mm long above, sparse and 0.75 mm long beneath; margin minutely denticulate, teeth terminating in a hair; 3-plinerved, lateral veins ascending, plane on both surfaces, indistinct above, beneath distinct in lower half of lamina. Inflorescence a terminal 1–3-flowered scorpioid cyme. Peduncle filiform, magenta, 8–21 mm long and 0.3–0.5 mm thick, elongating to 4–6 cm in infructescence. Flowers 3-merous, actinomorphic, bisexual; pedicel 0.5 to *c.* 1 mm long; hypanthium tubular, *c.* 5 mm long, 2 mm wide, with sparse glandular hairs *c.* 0.3 mm long and covered by a dense layer of non-glandular hairs, *c.* 0.03 mm long; sepals triangular, apex acute, magenta, 0.5 mm long, persistent in mature fruit; petals broadly oval, 9 × 5 mm, base rounded, apex apiculate *c.* 1 mm long, thin, inner surface white, outer white with pale rosy-pink midline and slightly suffused rosy pink towards apex, opening horizontally, margin and dorsal midline with sparse glandular hairs; stamens 3, erect, filament *c.* 4 mm long, white, anther *c.* 2.5 mm long, base cordate, tapering acutely to the apex, lemon yellow, connective indistinct, without appendix; ovary 3-loculate; style *c.* 5.5 mm long, glabrous, white, stigma peltate, minute, surface papillose. Mature capsule cylindric, 6–12 mm long and 2–3 mm wide, slightly ribbed, smooth. Seeds ellipsoid, *c.* 0.75 mm long, 0.25 mm wide, base rounded, apex narrowed to a point, covered in longitudinal rows of prominent pustules and with a longitudinal smooth wing less than half the width of the seed.

DISTRIBUTION. Endemic to Peninsular Malaysia, known only from the type site on Pine Tree Hill at Fraser's Hill, Pahang.

HABITAT. Lower montane forest at 1500 m, locally common in lightly shaded, steep litter-free slopes below summit (where *S. hirsuta* Ridl. also grows) and, in sterile state, on bare areas on the exposed summit, locally common.

Sonerila fraseri belongs to the group of small herbaceous sonerilas within *Sonerila* section *Eusonerila* subsection *Erectae* (Ridley 1922) with branched, wiry stems, isomorphic and equal-sized pairs of leaves and narrow, cylindric capsules, which includes three endemic species, *S. calaminthifolia* Stapf (from Gunung Batu Putih, Perak), *S. erecta* Jack (from Penang; Taiping, Perak; and Fraser's Hill), *S. linearis* Hook. *f.* (from Gunung Jerai, Kedah), and *S. tenera* Royle (from India, Thailand, Indo-China and in Peninsular Malaysia only from Langkawi).

Sonerila fraseri is distinct from all these species in its white flowers (the other four have pink flowers) and in the size and shape of its lamina. *S. linearis* has sessile, linear

leaves at least ten times longer than wide and *S. calaminthifolia* has oblong or elliptic leaves two-and-a-half to three times longer than wide. *S. erecta* and *S. tenera* usually have lanceolate leaves but their smaller leaves tend to be ovate; they differ from the ovate leaves of *S. fraseri* in having an acute apex. *S. tenera* is also different in having petioles more than 1 cm long. In addition, these two species have small flowers with petals up to 5 mm long. Therefore, among these species, *S. fraseri* most resembles *S. erecta* from which it is distinguished by the shape of the stem, lamina size, petal colour and length, and fruit length (Table 2).

Table 2. Characters that distinguish *Sonerila fraseri* from *S. erecta.*

	S. fraseri	*S. erecta*
Stem	terete	± quadrangular
Lamina		
shape	ovate	usually lanceolate, smaller leaves ovate
maximum size (cm)	2.5 × 1.4	3.3 × 1
base	rounded	cuneate to truncate
apex	rounded	acute
colour	always green	sometimes purple beneath
Petal		
colour	white	pink*
length (mm)	9	4–5
Fruit length (mm)	12	8

* within a population, very rarely one plant may have white flowers.

Sonerila erecta is common at Fraser's Hill, especially on roadside cuttings, and within the forest particularly on quartzite, but it is not found above 1325 m, whereas *S. fraseri* is known from a single population on Pine Tree Hill at about 1500 m.

Although many botanists have collected at Pine Tree Hill (the highest peak at Fraser's Hill), there are no other collections of *S. fraseri*. This suggests that it flowers irregularly and for short periods as its large, white star-like flowers are conspicuous, especially as the population flowers gregariously. When out of flower, it is easily overlooked. *S. erecta* displays this type of flowering, i.e. gregarious flowering at irregular intervals.

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